AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions, and listings, of claims in the application.

1. (Currently Amended) A method for generating hardness information of tissue subject to a varying pressure, the method comprising:

receiving signals from a tissue with a sensor for measuring the deformation of the tissue in a measuring plane defined by the sensor, where the sensor is moved during the receiving signals step:

(a) in a direction transverse to the measuring plane, and

(b) while the tissue is subject to a varying pressure;

identifying strain of the tissue from the signals received by the sensor moved along the tissue in the direction transverse to the measuring plane; and

relating the strain to at least one of either hardness or elasticity parameters of the tissue~~, wherein an optimum overlap is determined by means of a probability function displaying the similarity between consecutive signals~~.

2. (Previously presented) The method according to claim 1, wherein the method comprises:

correlating signals acquired consecutively over time, where the signals are representative of the deformation of the tissue at positions of the sensor moved with respect to other positions of the sensor; and

calculating, by means of said correlating signals step, strain in a tissue surface or tissue volume part extending parallel to the direction of motion of the sensor.

3. (Previously Presented) The method according to claim 1, wherein the method comprises the step of displaying elasticity and/or hardness parameters of a tissue surface or tissue volume part.

4. (Previously Presented) The method according to claim 1, wherein the signals are echographic data detected with an acoustic sensor.

5. (Previously Presented) The method according to claim 1, wherein the signals are optical data detected with an optical sensor.

6. (Previously Presented) The method according to claim 1, wherein the method comprises displaying elasticity and/or hardness parameters of the tissue with position information of the sensor and/or the tissue.

7. (Previously presented) The method according to claim 1, wherein the signals are received during continuous motion of the sensor.

8. (Previously Presented) The method according to claim 1, wherein signals possessing an overlap are received.

9. (Canceled).

10. (Previously presented) The method according to claim 1, wherein signals, at an assumed cyclic pressure change, are received at predetermined time intervals in a pressure change cycle.

11. (Previously Presented) The method according to claim 1, wherein the signals come from a blood vessel wall and the data are received only during a specific time interval of the period of the heartbeat.

12. (Previously presented) The method according to claim 1, wherein the tissue is an artery moving during the heartbeat in the longitudinal direction, and the sensor is moved parallel to the longitudinal direction, so that, during at least one detection period, the sensor has a fixed position relative to the wall of the artery.

13. (Currently amended) An apparatus for generating hardness information of tissue subject to a varying pressure, wherein the apparatus comprises:

a sensor movable through a blood vessel or body cavity for recording signals from a tissue, wherein the sensor is controlled to acquire signals from the tissue, during a period of varying pressure exerted on the tissue, while being controllably moved along the tissue in a direction transverse to a measuring plane defined by the sensor;

a processor device for collecting and processing signals from the sensor to identify strain of the tissue and to relate the strain to elasticity and/or hardness parameters of a tissue surface or tissue volume part; and

a display device for displaying elasticity and/or hardness parameters of the tissue surface or tissue volume part~~,~~

~~wherein an optimum overlap is determined by means of a probability function displaying the similarity between consecutive signals~~.

14. (Previously presented) The apparatus of claim 13, wherein the apparatus comprises:

correlation detection means for detecting the correlation between consecutively acquired signals, where the signals are representative of the deformation of the tissue at positions of the sensor moved with respect to other positions of the sensor;

the processor device being arranged to calculate by means of said correlation a strain in a tissue surface or tissue volume part extending parallel to the direction of motion of the sensor.

15. (Previously Presented) The apparatus of claim 13, wherein the apparatus further comprises:

a position recording means coupled with the processor device to record sensor positions.

16. (Previously Presented) The apparatus of claim 13, wherein the apparatus further comprises:

an actuator for controllably moving the sensor in the direction transverse to the measuring plane.

17. (Original) The apparatus of claim 16, wherein the actuator has an adjustable speed of motion.

18. (Previously Presented) The apparatus of claim 13, wherein the apparatus further comprises:

first activating means for activating data storage means for storing signals.

19. (Previously Presented) The apparatus of claim 13, wherein the apparatus comprises:

second activating means for activating the actuator.

20. (Previously Presented) The apparatus of claim 18, wherein the activating means can be connected with an ECG recording device to become active during a predetermined part of the heartbeat.

21. (Previously Presented) The apparatus of claim 18, wherein the activating means are connected with the correlation detection means to become active at a predetermined correlation.

22. (Previously Presented) The apparatus of claim 13, wherein the sensor is arranged in a catheter, which can be inserted into a blood vessel, the sensor recording signals under controlled pullback of the catheter.

23. (Previously Presented) The apparatus of claim 13, wherein the sensor is an acoustic sensor.

24. (Previously Presented) The apparatus of claim 13, wherein the sensor is an optical sensor.

25. (New) The method of claim 1 wherein an optimum overlap is determined by means of a probability function representing similarity between consecutive signals.

26. (New) The apparatus of claim 1 wherein an optimum overlap is determined by means of a probability function representing similarity between consecutive signals.